Saurav Kumaraswami Shastri

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EDUCATION

B.E. in Electrical and Electronics Engineering

- PES Institute of Technology*, Bengaluru, India. Aug 2014 – May 2018
  - Graduated *Summa Cum Laude* with cumulative GPA of 9.61/10 and ranked first in the department.

Pre University Education in Science

- Deeksha Center for Learning PU College, Bengaluru, India. Jun 2012 – May 2014
  - Graduated with Distinction with a score of 532/600 in Second PUC Examination.

RESEARCH INTERESTS

Signal Sampling and Reconstruction, Machine Learning, Sparsity-Aware Signal Processing, Computer Vision, Phase Recovery, Compressed Sensing, Computational Imaging, Optimization and Inverse Problems.

RESEARCH EXPERIENCE

Project Assistant, Spectrum Lab, Department of Electrical Engineering

- Indian Institute of Science, Bengaluru, India. Jun 2018 – Present
  - Project 1 : A Low-Cost, Portable, Super-Resolution Ultrasound Scanner. [Project Details]
  - Project 2 : Structured Nonuniform Sampling for Sub-Nyquist Radar.
  - Project 1 is funded by IMPRINT, Ministry of Human Resource Development, Government of India.

Research Intern, Spectrum Lab, Department of Electrical Engineering

- Indian Institute of Science, Bengaluru, India. Jan 2018 – Jun 2018
  - Project (Undergraduate Thesis): Sub-Nyquist Sampling and Reconstruction of Ultrasound Signals.

Research Intern, Department of Mathematics

- Simon Fraser University, Burnaby, Canada. May 2017 – Aug 2017
  - Mitacs Globalink Research Internship, Canada.
  - Project: Compressed Sensing in Parallel Image Acquisition Systems.

Undergraduate Researcher, Crucible of Research and Innovation

- PES Institute of Technology, Bengaluru, India. Jan 2017 – May 2017
  - Project: A Fast, Parallel Algorithm for Fully Overlapped Allan Variance and Total Variance (Paper 1).

Research Intern, Crucible of Research and Innovation

- PES Institute of Technology, Bengaluru, India. Jun 2016 – Jul 2016
  - Project: Study, Design of Magnetorquer and Detumbling Controller for Nanosatellite-PISAT (Paper 2).

PUBLICATIONS & PRESENTATIONS

JOURNALS / LETTERS

† Authors contributed equally.

[1] S. M. Yadav†, S. K. Shastri†, G. B. Chakravarthi, V. Kumar, A. Divya Rao and V. K. Agrawal, "A Fast, Parallel Algorithm for Fully Overlapped Allan Variance and Total Variance for Analysis and Modeling of Noise in Inertial Sensors," in *IEEE Sensors Letters*, vol. 2, no. 2, pp. 1-4, Jun 2018. [Paper]

CONFERENCES

[2] S. K. Shastri, K. Chandrashekar, S. Mishra, D. R. Gourav, J. Bhagatji, A. Divya Rao and V. K. Agrawal, "In-Orbit Performance of PISAT Detumbling and Advanced B-Dot Implementation to Tackle Challenges in Active Detumbling Magnetic Control System of Nanosatellites," in *Proc. 69th International Astronautical Congress*, Bremen, Germany, Oct 2018. [Paper]

PRESENTATIONS

[3] S. Rudresh, S. K. Shastri and C. S. Seelamantula, "High Precision Target Localization Using a Sub-Nyquist Super-Resolution Radar," accepted for presentation at *2019 URSI Asia-Pacific Radio Science Conference (AP-RASC 2019)*, New Delhi, India, Mar 2019.

MANUSCRIPTS UNDER PREPARATION

[4] S. K. Shastri, S. Rudresh and C. S. Seelamantula, "Sparse Recovery based Axial Super-Resolution in Ultrasound Imaging".

[5] S. K. Shastri, S. Rudresh and C. S. Seelamantula, "Structured Nonuniform Sampling for Sub-Nyquist Radar".

*Autonomous Institute under Visvesvaraya Technological University, Belgaum.

AWARDS & SCHOLARSHIPS

INTERNATIONAL

- 2017 Globalink Research Intern Award. Jan 2017
  Mitacs Globalink, Canada.
  The Globalink Research Internship is a highly competitive internship program for international undergraduates–awarded to the top 5% of around 12,000 applicants. It is a fully funded twelve week research internship in a Canadian University.

DOMESTIC

- Institute Gold Medal in Electrical and Electronics Engineering. Sep 2018
  For securing first rank in the Department of Electrical and Electronics Engineering, PES Institute of Technology.
- Best Outgoing Student. Apr 2018
  Department of Electrical and Electronics Engineering, PES Institute of Technology.
- Professor MRD Merit Scholarship. 2015 – 2017
  Fall 2015 through Fall 2017, PES Institute of Technology.
  For being in the top five performers (batch of 68 students) of B.E in Electrical and Electronics. Scholarship for undergraduate studies.
- Professor C N R Rao Merit Scholarship. 2015 – 2017
  Fall 2015 through Fall 2017, PES Institute of Technology.
  For being in the top twenty percent performers (batch of 68 students) of B.E in Electrical and Electronics. Fifteen percent of tuition scholarship for undergraduate studies.

RESEARCH PROJECTS

- Structured Nonuniform Sampling for Sub-Nyquist Radar. Oct 2018 – Present
  Advisors: Prof. Chandra Sekhar Seelamantula and Mr. Sunil Rudresh.
  Focus: Structured Nonuniform Sampling, Block Annihilation, Block Cadzow Denoising, Doppler and Delay Focusing.
- A Low-Cost, Portable, Super-Resolution Ultrasound Scanner. Jun 2018 – Present
  Advisors: Prof. Chandra Sekhar Seelamantula and Mr. Sunil Rudresh.
  Focus: Beamforming, Compressed Sensing, Sparse Recovery, Finite-Rate-of-Innovation, Inverse Problem, Optimization.
- Sub-Nyquist Sampling and Reconstruction of Ultrasound Signals. Jan 2018 – Present
  Advisors: Prof. Chandra Sekhar Seelamantula, Mr. Sunil Rudresh and Prof. Venkatesh S.
  Focus: Super-Resolution, Finite-Rate-of-Innovation, Sub-Nyquist Sampling, Non-Periodic Sum-of-Sincs Sampling Kernel, Sparse Recovery, Compressed Sensing.
- Compressed Sensing in Parallel Image Acquisition Systems. May 2017 – Aug 2017
  Advisor: Prof. Ben Adcock.
  Focus: Auto-calibration of parallel Magnetic Resonance Imaging (pMRI), Compressed Sensing, reduction of biconvex problem into linear least squares and convex optimization problem, sparse regulariser for a calibrated pMRI model.
- Study, Design of Magnetorquer and Detumbling Controller for Nanosatellite. Jun 2016 – Aug 2016
  Advisor: Mrs. Divya Rao.
  Focus: Magnetorquers, 3-D Magnetic Field Mapping, B-Dot Detumbling Controller.

OTHER PROJECTS

- A Fast, Parallel Algorithm for Fully Overlapped Allan Variance and Total Variance. Jan 2017 – Jul 2017
  Advisors: Prof. Viraj Kumar and Mrs. Divya Rao.
  Focus: Allan Variance, Total Variance, Fast and Parallelizable Algorithms, Inertial sensor stochastic noise modelling.
- Serial Periferal Interface of ADIS16405 with LPC1768. Jan 2017 – May 2017
  Advisors: Prof. Venkatarangan M. J and Mrs. Divya Rao.
  Focus: SPI,SSP and UART Interfaces, Allan Variance, C Programming.

RELEVANT COURSES

Linear Algebra, Signals and Systems, Digital Signal Processing, Digital Image Processing, Speech Processing, Engineering Mathematics (I,II,III), Machine Learning (Coursera - audited), Deep Learning Specialization (Coursera - ongoing).

PROGRAMMING/ SOFTWARE

MATLAB, Python, C, Field-II Ultrasound, LaTeX.

PROFESSIONAL AFFILIATIONS & ACTIVITIES

Student Member, IEEE. 2015 – Present
Student Member, SAE India. 2016 – Present
Executive member, Electrical team, Team Haya , PES University. 2015 – 2017
Executive member, Electrical team, Team Samkaran, PES University. 2016 – 2017
Treasurer and Event Manager, IEEE Student Branch, PES University. 2015 – 2017
Member, Team PISAT, PES University. 2016

EXTRA/CO-CURRICULAR ACTIVITIES

Featured on the TV show "*Thaat Antha Heli*" where I had the opportunity to represent PISAT on DD Chandana.
Level 5 Google Guide, with over 1.4 Million views on photographs.
Winners (2015, 2016 & 2017), Molecular Murals (Painting competition using chemicals), Pravega, IISC.
Volunteer, Aatmatrisha (Techno-Cultural Fest) and The Amateur Scientist (Science Fest), PES University.